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IS 4346 (1982): washers for use with fittings for water services [CED 3: Sanitary Appliances and Water Fittings]



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*Indian Standard*  
SPECIFICATION FOR  
WASHERS FOR USE WITH FITTINGS FOR  
WATER SERVICES  
( *First Revision* )

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**BUREAU OF INDIAN STANDARDS**  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

# *Indian Standard*

## SPECIFICATION FOR WASHERS FOR USE WITH FITTINGS FOR WATER SERVICES ( *First Revision* )

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*Indian Standard*  
SPECIFICATION FOR  
WASHERS FOR USE WITH FITTINGS FOR  
WATER SERVICES  
(*First Revision*)

**0. FOREWORD**

**0.1** This Indian Standard ( First Revision ) was adopted by the Indian Standards Institution on 30 November 1982, after the draft finalized by the Sanitary Appliances and Water Fittings Sectional Committee had been approved by the Civil Engineering Division Council.

**0.2** Leakage of water from water fittings leads to wastage of potable water, conservation of which has become an urgent necessity. The leakage is dependent on the construction of the water fitting as well as on the quality of the washers used in the fittings. This standard lays down the requirements for the quality of washers so that they give good performance and long usage.

**0.2.1** This standard was first published in 1967. The present revision of the standard has been taken up to incorporate changes found necessary in the standard in the light of improvements made by the industry in this field.

**0.3** A well-manufactured washer should last at least six months and the washer fitted in taps should be replaced when signs of leakage are visible.

**0.4** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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\*Rules for rounding off numerical values ( revised ).

## 1. SCOPE

**1.1** This standard covers requirements of washers for water services suitable for use in bib taps, stop valves, self-closing taps, flush valves, pillar taps and ferrules covered in IS : 781-1977\*, IS : 1795-1982†, IS : 1711-1970‡, IS : 2692-1978§, IS : 5869-1970||, IS : 8931-1978¶, IS : 8934-1978\*\* and IS : 9758-1981†† respectively.

## 2. TERMINOLOGY

**2.0** For the purpose of this standard, the following definitions shall apply.

**2.1 Cold Water** — Water having temperature between 0° and 45°C.

**2.2 Hot Water** — Water having temperature above 45°C.

**2.3 Tap Washers** — Disc fitted to the washer plate of a tap or valve in such a manner that on closing the tap or valve it is brought in contact with the seating of the tap or valve and closes the orifice against further flow.

**2.4 Vulcanized Fibre** — Material consisting of super-imposed layers of specially prepared paper, chemically treated, so that the laminae are virtually destroyed with the production of a homogeneous mass of converted cellulose.

## 3. EFFECTS ON POTABLE WATER AND METALS

**3.1 Effect on Potable Water** — Material used for tap washer shall not impart any taste to water having a residual chloride content not exceeding 0.2 mg/l or have any toxic effects or foster growth of bacteria, it shall also not impart colour when exposed for a second time in normal potable water for 24 hours in a glass containing 250 ml of water at 10° and 45°C.

**3.2 Effect on Metal** — The material of the washer shall not corrode the metal seating or the washer plate sufficiently to impair the performance and life of a tap or valve.

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\*Specification for cast copper alloy screw-down bib taps and stop valves for water services ( *second revision* ).

†Specification for pillar taps for water supply purposes ( *second revision* ).

‡Specification for self closing taps ( *first revision* ).

§Specification for ferrules for water services ( *first revision* ).

||Specification for pillar taps for marine use.

¶Specification for cast copper alloy fancy bib taps for water services.

\*\*Specification for cast copper alloy fancy pillar taps for water services.

††Specification for flush valves for fittings for water closets and urinals.



## 4. MATERIAL

**4.1** Material for washers shall be one of the following:

- a) Synthetic or natural vulcanized rubber;
- b) Vegetable tanned hydraulic leather;
- c) Polyethylene, high density; and
- d) Vulcanized fibre.

## 5. REQUIREMENTS

**5.1 General** — The quality of material to be used for washers shall be such that the washer does not crack when the tap is fully closed.

**5.2 Synthetic or Natural Vulcanized Rubber** — The rubber shall conform to Grade 6 of IS : 5192-1975\*.

**5.3 Vegetable Tanned Hydraulic Leather** — The leather shall conform to the chemical and physical requirements given in IS : 581-1976†. The moisture content shall be between 15 percent and 20 percent.

**5.4 Polyethylene High Density** — High density polyethylene should conform to the requirements given in IS : 7328-1974‡.

**5.5 Vulcanized Fibre** — The material shall comply with the following requirements:

- |                                 |                              |
|---------------------------------|------------------------------|
| a) Tensile strength, <i>Min</i> | 55 MPa;                      |
| b) Density, <i>Min</i>          | 1.10 g/cm <sup>3</sup> ; and |
| c) Shear strength, <i>Min</i>   | 55 MPa.                      |

## 6. DIMENSIONS

**6.1 Thickness and Diameter** — Washers shall be supplied to the thicknesses and diameters as given in Table 1. The variation in thickness in the case of leather washers shall not exceed  $\pm 5$  percent.

\*Specification for vulcanized natural rubber based compounds ( *first revision* ).

†Specification for vegetable tanned hydraulic leather ( *second revision* ).

‡Specification for high density polyethylene materials for moulding and extrusion.

**TABLE 1 DIMENSIONS OF WASHERS**

( Clause 6.1 )

All dimensions in millimetres.

NOMINAL SIZE OF TAP/VALVE	THICKNESS OF WASHER <i>Min</i>	DIAMETER OF WASHER		
		Internal*	External	
			<i>Min</i>	<i>Max</i>
(1)	(2)	(3)	(4)	(5)
8	2.5	3	14.3	14.5
10	4.0	4	15.9	16.1
15	4.0	5	19.0	19.3
20	4.0	6	25.4	25.6
25	5.0	6	33.3	33.6
32	5.0	7	40.1	40.6
40	6.5	8	47.7	48.3
50	6.5	10	63.5	64.2

\*A tolerance of  $\begin{matrix} + 0.5 \\ - 0.0 \end{matrix}$  mm shall be permitted.

## 7. MARKING

**7.1** The identification mark and the trade-mark of the manufacturer shall be marked on the box or carton containing washers.

**7.2** Boxes or cartons containing washers may also be marked with the ISI Certification Mark.

**NOTE** — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution ( Certification Marks ) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors may be obtained from the Indian Standards Institution.

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